

We claim:

1. A power supply comprising:
  - a conversion mechanism to control conversion of first a direct current (DC) signal to a second DC signal provided to an electronic device by switching the
  - 5 first DC signal to vary the second DC signal; and,
  - a feedback mechanism to cause the conversion mechanism to operate in one of a nominal-power mode and a reduced-power mode according to a control signal received from the electronic device,
  - the reduced-power mode in which the conversion mechanism is caused to
  - 10 lessen at least one of a duty cycle and a frequency at which the first DC signal is switched until a voltage of the second DC signal decays to a first voltage level.
2. The power supply of claim 1, wherein in the nominal-power mode the conversion mechanism is caused to switch the first DC signal at at least one of
- 15 a greater duty cycle and at a greater frequency as compared to the duty cycle and the frequency at which the first DC signal is switched within the reduced-power mode.
3. The power supply of claim 2, wherein the feedback mechanism comprises:
  - a comparing mechanism to compare the voltage of the second DC signal to
  - 20 a third voltage level and a fourth voltage level and to generate a feedback signal in response thereto to cause the conversion mechanism to switch the first DC signal low upon the voltage of the second DC signal reaching the third voltage level so that the voltage of the second DC signal decreases and to switch the first DC signal high upon the voltage of the second DC signal
  - 25 reaching the fourth voltage level so that the voltage of the second DC signal increases; and,
  - a modal mechanism to skew comparison of the voltage of the second DC signal to the third voltage level and the fourth voltage level in response to receiving the control signal from the electronic device, such that the comparing

mechanism is effectively caused to compare the voltage of the second DC signal provided to the electronic device to the first voltage level and a second voltage level to switch the first DC signal low upon the voltage of the second DC signal reaching the first voltage level so that the voltage of the second DC signal decreases and to switch the first DC signal at the duty cycle upon the voltage of the DC signal decreasing to the second voltage level so that the voltage of the second DC signal increases.

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4. The power supply of claim 3, wherein the modal mechanism is to pass through the second DC signal to the comparing mechanism without modification to allow the conversion mechanism to operate in the nominal-power mode, and is to modify the second DC signal before passing the second DC signal to the comparing mechanism to cause the conversion mechanism to operate in the reduced-power mode.

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5. The power supply of claim 4, wherein the modal mechanism is to pass through to the comparing mechanism the second DC signal without modification in absence of assertion of the control signal by the electronic device, and is to modify the second DC signal before passing the second DC signal to the conversion mechanism upon assertion of the control signal by the electronic device.

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6. The power supply of claim 2, wherein in the nominal-power mode the second DC signal is regulated.

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7. The power supply of claim 1, wherein in the nominal-power mode the electronic device is actively functioning, and in the reduced-power mode the electronic device is idling.

8. The power supply of claim 1, further comprising:  
an AC-DC mechanism to receive an alternating current (AC) signal from a

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power source and to convert the AC signal to the first DC signal; and,

a DC-DC mechanism to convert the first DC signal to the second DC signal by switching the first DC signal high and low and which is controlled by the conversion mechanism, and to provide the second DC signal to the electronic device.

9. The power supply of claim 1, wherein the power supply is external to the electronic device.

10. The power supply of claim 1, wherein the power supply is internal to the electronic device.

11. The power supply of claim 1, wherein the electronic device is an image-forming device.

12. A power supply comprising:

a switching control mechanism to control conversion of a first direct current (DC) signal to a second DC signal provided to an electronic device by switching the first DC signal to vary the second DC signal;

a comparing mechanism to compare a voltage of the second DC signal provided to the electronic device to a first voltage level and a second voltage level and to cause the switching control mechanism to switch the first DC signal low upon the voltage of the second DC signal reaching the first voltage level so that the voltage of the second DC signal decreases and to switch the first DC signal high upon the voltage of the second DC signal reaching the second voltage level so that the voltage of the second DC signal increases; and,

a modal mechanism to pass through the second DC signal to the comparing mechanism without modification in absence of assertion of a control signal by the electronic device to cause the switching control mechanism to operate in a normal-power mode, and to modify the second DC signal before passing the second DC signal to the switching control mechanism upon assertion of the

control signal by the electronic device to cause the switching control mechanism to operate in a low-power mode.

13. The power supply of claim 12, wherein the normal-power mode is in which the switching control mechanism is caused to switch the first DC signal at a duty cycle such that the voltage of the second DC signal fluctuates between the first voltage level and the second voltage level.

14. The power supply of claim 13, wherein the low-power mode is in which the switching control mechanism is caused to switch the first DC signal at the duty cycle until the voltage of the second DC signal reaches a third voltage level different than the first voltage level and then is caused to lessen switching the first DC signal until the voltage of the second DC signal decays to fourth voltage level different than the second voltage level.

15. The power supply of claim 12, wherein in the normal-power mode the electronic device is actively functioning, and in the low-power mode the electronic device is idling.

16. The power supply of claim 12, further comprising:  
an AC-DC mechanism to receive an alternating current (AC) signal from a power source and to convert the AC signal to the first DC signal; and,  
a DC-DC mechanism to convert the first DC signal to the second DC signal by switching the first DC signal high and low and which is controlled by the switching control mechanism, and to provide the second DC signal to the electronic device.

17. The power supply of claim 12, wherein the electronic device is an image-forming device.

18. A power supply comprising:

a switching control mechanism to control conversion of a first direct current (DC) signal to a second DC signal provided to an electronic device by switching the first DC signal to vary the second DC signal; and,

5 means for causing the switching control mechanism to operate in one of a full-power mode and a low-power mode according to a control signal received from the electronic device,

the low-power mode in which the switching control mechanism is caused to switch the first DC signal at a duty cycle until a voltage of the second DC signal reaches a first voltage level and then is caused to lessen switching of the first DC signal until the voltage of the second DC signal decays to a second voltage level.

19. The power supply of claim 18, wherein the full-power mode is in which the switching control mechanism is caused to switch the first DC signal at the duty cycle such that the voltage of the second DC signal fluctuates between a third voltage level and a fourth voltage level.

20. The power supply of claim 18, wherein the electronic device is an image-forming device.

21. An electronic device comprising:

20 one or more components to perform a predetermined functionality of the electronic device; and,

a power supply to convert a first direct current (DC) signal to a second DC signal to power the one or more components, the power supply having a low-power mode in which the first DC signal is switched at a duty cycle until a voltage of the second DC signal reaches a first voltage level and then lessens switching of the first DC signal until the voltage of the second DC signal decays to a second voltage level.

22. The electronic device of claim 21, wherein the predetermined functionality is image formation on media, such that the electronic device is an image-forming device.

23. The electronic device of claim 21, wherein the power supply further has a  
5 full-power mode in which the first DC signal is switched at the duty cycle such that the voltage of the second DC signal fluctuates between a third voltage level and a fourth voltage level.

24. The electronic device of claim 23, wherein the one or more components  
10 assert a control signal to cause the power supply to operate in the low-power mode, and de-assert the control signal to cause the power supply to operate in the full-power mode.

25. The electronic device of claim 23, wherein in the full-power mode the one or more components are actively performing the predetermined functionality, and in the low-power mode the one or more components are idling.

15 26. An electronic device comprising:  
one or more components to perform a predetermined functionality of the electronic device; and,  
means for converting a first direct current (DC) signal from a power source to a second DC signal to power the one or more components in a first mode in  
20 which the first DC signal is switched at a duty cycle until a voltage of the second DC signal reaches a first voltage level and then lessens switching of the first DC signal until the voltage of the second DC signal decays to a second voltage level, and in a second mode in which the first DC signal is switched at the duty cycle such that the voltage of the second DC signal fluctuates between a third  
25 voltage level and a fourth voltage level.

27. The electronic device of claim 26, wherein the predetermined functionality is image formation on media, such that the electronic device is an image-forming device.

28. The electronic device of claim 27, wherein the one or more components  
5 assert a control signal to cause the power supply to operate in the low-power mode, and de-assert the control signal to cause the power supply to operate in the full-power mode.

29. The electronic device of claim 27, wherein in the full-power mode the one or more components are actively performing the predetermined functionality, and  
10 in the low-power mode the one or more components are idling.

30. A method comprising:

converting a first direct current (DC) signal to a second DC signal;

providing the second DC signal to an electronic device;

in response to receiving a first control signal from the electronic device to

15 operate in a low-power mode, repeating:

switching the first DC signal at a duty cycle until a voltage of the second DC signal reaches a first voltage level; and,

lessening switching of the first DC signal until the voltage of the second DC signal decays to a second voltage level,

20 until a second control signal is received from the electronic device to operate in a normal-power mode.

31. The method of claim 30, further comprising initially receiving the control signal from the electronic device to operate in the low-power mode.

32. The method of claim 30, further comprising idling by the electronic device in  
25 the low-power mode.

33. The method of claim 30, further comprising, in response to receiving the second control signal from the electronic device to operate in the normal-power mode, switching the first DC signal at the duty cycle so that the voltage of the second DC signal fluctuates between a third voltage level and a fourth voltage  
5 level, until the first control signal is again received from the electronic device to operate again in the low-power mode.

34. The method of claim 33, further comprising actively functioning by the electronic device in the normal-power mode.